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1. 合同評価報告書

MINUTES OF MEETING ON THE EVALUATION FOR THE MINI-PROJECT-TYPE TECHNICAL COOPERATION FOR HIGHLANDS AQUACULTURE DEVELOPMENT PROJECT IN PAPUA NEW GUINEA

The Japanese Evaluation Study Team (hereinafter referred to as "the Team") of Japan International Cooperation Agency (hereinafter referred to as "JICA"), headed by Dr. Kiyoshi SAKAI, an associate professor of Tokyo University of Fisheries visited Papua New Guinea from June 29 to July 7, 1999.The team conducted an overall review and a joint evaluation with concerned authorities of Papua New Guinea, namely,Eastern Highlands Provincial Administration(hereinafter referred to as "EHPA"), Office of National Planning,Department of Treasury and Planning(hereinafter referred to as "ONP") and National Department of Agriculture and Livestock (hereinafter referred to as "DAL") ,of the Mini-Project-Type Technical Cooperation for Highlands Aquaculture Development Project (hereinafter referred to as"the Project") on the basis of the Minutes signed on May 21, 1996 (hereinafter referred to as "the Minutes").

During its stay in Papua New Guinea, the Team had a series of discussions and field observations with Papua New Guinean team composed of representative of EHPA,ONP and DAL.

As the result of the discussions, the parties concerned agreed to conclude on the matters referred to in the document attached hereto.

Port Moresby, July 6, 1999

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Mr. Henol Omenefa
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General Gago Mamae
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Acting First Assistant Secretary
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For
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Acting Director
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Planning
Papua New Guinea

Mr. Ted Sitapai
Acting Secretary
Department of
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Papua New Guinea

SUMMARY REPORT ON THE JOINT EVALUATION FINDINGS

1. INTRODUCTION

1-1 Joint Evaluation Team

The Government of Japan through JICA and the government of Papua New Guinea through EHPA have commenced implementing the Project since June 23, 1996, with a cooperation period of three years based on the Minutes.
The Japanese Evaluation Team headed by Dr. Kiyoshi SAKAI was dispatched by JICA to Papua New Guinea to conduct an overall review and a joint evaluation on the achievements of the Project with the authorities concerned.
The PNG authorities concerned appointed the following members to form the joint evaluation team.

Member of the Evaluation Teams

(a) Japanese Team

Dr. Kiyoshi SAKAI	Leader
Dr. Hiromu IKENOUE	Fisheries Development
Mr. Yoshihiro SATO	Coordination and Cooperation Planning

(b) Papua New Guinea Team

Mr. Noel Geti	Japan desk officer, ONP
Mr. Ian Mopafi	Director,Highlands Regional Office, DAL
Mr. Nefion Terapi	Division of Agriculture and Livestock, EHPA

The Joint evaluation was conducted from June 29 to July 7, 1999(Shown in Annex 1) and the result of the evaluation activities were summarized in this report.

1-2 Purpose of the Evaluation

(a) To review the project implementation process
(b) To evaluate degree of target achievement, impact and prospect for project sustainability
(c) To present recommendation to both governments

1-3 Criteria of Evaluation

The joint team evaluated the rationale,efficiency, effectiveness, impact and sustainability of the Project through observations of project activities, reviewing of the project reports and disccusions with project staff and farmers.

2. BACKGROUND AND SUMMARY OF THE PROJECT

2-1 Brief Background of the Cooperation.

Carp was introduced about 40 years ago into Papua New Guinea. Since then the highlands people were attracted to raising fish in farm ponds. There has

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been a high demand from the public for fingerlings and training for carp farming. The main reason for carps popularity is its inexpensive operational and infrastructure costs. Anyone can dig a small pond around his or her house. This is the cheapest means of animal protein production for the highlanders.

The government of PNG tried to support the development of carp farming in the past. However, the government effort was not successful. A practical problem was that they could not produce fingerlings to supply to the farmers. Without fingerlings, other development efforts such as extension/advisory services and marketing was in vain. The situation remained the same until JICA sent an expert to Highlands Aquaculture Development Centre (HAQDEC) at Aiyura in 1993.

The Government of PNG requested for Japanese government assistance in 1994. The Japanese Government agreed to assist the inland aquaculture project under Mini-Project Type Cooperation of JICA.

National Fisheries Authority (NFA) which superseded Department of Fisheries and Marine Resources(DFMR) decided to transfer the project to EHPA consistent with the Reform Organic Law which was passed by the parliament in 1995. The project with JICA's technical assistance commenced with EHPA as the implementation agency based on the Minutes.

2-2 Chronological Review of the Cooperation

Chronological Review of the Cooperation is as shown in Annex 2.

2-3 Objectives of the Cooperation

The project aims to upgrade the technical capability of HAQDEC in the following areas;

(a) Increase fingerling production
(b) Conduct training on aquaculture
(c) Conduct research on aquaculture

3. INPUTS AND OUTPUTS OF THE PROJECT

3-1 Inputs

3-1-1 Inputs by the Japanese Side

(a) Dispatch of Japanese Experts and Survey Teams

JICA dispatched three (3) long-term experts, four (4) short-term experts and two (2)Third Country experts. It also sent two (2) missions for the Cooperation, as shown in Annex 3 and Annex 4, respectively.

(b) Acceptance of the Papua New Guinean Counterpart Personnel for Training in Japan

JICA accepted eight (8) Papua New Guinean counterpart personnel for study in Japan and sent two(2) to the Philippines for Third Country Training as shown in Annex 5.

(c) Provision of Machinery and Equipment

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The machinery, equipment and materials, equivalent to 36,760,000 yen in total, were provided by the Japanese Government through JICA as shown in Annex 6.

(d) Expenses incurred by the Japanese Side

The total outlay of the Cooperation, equivalent to 60,820,000 yen in total, can be summarized as shown in Annex 7.

3-1-2 Inputs by the Papua New Guinean Side

(a) Allocation of Papua New Guinean Counterparts and Administrative Personnel

The Papua New Guinean side allocated technical personnel as shown in Annex 8 as well as other necessary administrative personnel.

(b) Provision of facilities at HAQDEC

Buildings, ponds and lands have been provided by Papua New Guinean side .

(c) Expenses incurred by the Papua New Guinean Side

The total outlay of the Cooperation by the Papua New Guinean side is summarized as shown in Annex 9. The total amount is 496,000 Kina.

(d) Administrative support

ONP facilitated inter-agency coordination and cooperation for the smooth implementation of the project.

3-2 Outputs

As the result of the 3-year JICA cooperation, HAQDEC increased its technical capacity in the following aspects;

(a)Fingerling production:

The Centre became able to produce one million fingerlings in a year.

(b)Fingerling Distribution:

The number of fingerling distribution from HAQDEC before the JICA assistance was about 10,000 - 40,000 per year and this was increased to 300,000 in 1998.

(c)Aquaculture training:

The Centre became able to conduct three kinds of aquaculture training courses; carp farming for extension officers, fingerling production for advanced farmers and small-scale trout farming. A total of 8 courses as shown in Annex 10 were conducted during the 3-year period wherein 254 extension officers and farmers were trained by HAQDEC.

In addition to the above three major achievements, the project undertook the following activities;

(d)Yonki cage culture introduction:

Cage culture research system was developed and set by the Project at Yonki Reservoir with special funding from Japanese Grassroots Grant Aid of K58,000.

(e) Chinese carp importation:

Three species of Chinese carp(Grass Carp, Big Head Carp and Silver Carp) were imported into HAQDEC and are currently under quarantine.

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(f) Java Carp (*Puntius*) culture:

This fish was spawned at HAQDEC and some fingerlings were obtained.

(g)Trout farming:

HAQDEC technically assisted Lake Pindi Yaundo Trout Farm (LPYTF) in the Simbu Province in upgrading its spawning and fingerling production. Before the Project, all trout farmers were importing eyed eggs from Australia but now, they can be supplied eyed eggs and fingerlings from LPYTF. As a result of this development and other assistance from HAQDEC, a number of small scale trout farms have been developed during the 3-year project period in Goroka and North Simbu areas.

(h)Super Tilapia importation:

HAQDEC imported Super tilapia from the Philippines and are kept in quarantine facility at HAQDEC.

4. EVALUATION SUMMARY

4-1 Rationale

The purpose of the project are to promote village level aquaculture towards increasing production of high quality protein and creation of economic opportunities in the Highlands through proper extension of small scale fish farming technique as a new technical addition to the existing agriculture production system.

In the early stage of the project, there was no clear PNG government policy to support this purpose. However, lately, DAL included the HAQDEC's activities into its National Food Security Program due to the outstanding achievements of the Project.

DAL's program aims to improve, among others, aquaculture development by small scale farmers.

4-2 Efficiency

Taking the inputs to the project mentioned in 3-1 and the outputs from the project mentioned in 3-2 into consideration, it can be said that the Project has achieved their objectives mentioned in 2-3 within a rather short cooperation period of three years. This means that the Project has been implemented very efficiently.

4-3 Effectiveness

As outputs mentioned in 3-2 indicates, the project has achieved quite a number of valuable technical results to applicable to small scale fish farming.

The Project has also established various kinds of experimental facilities at HAQDEC, indispensable for the future research and development into inland aquaculuture technology relevant and appropriate under the conditions of the Highlands region. The Project has also established a training system for extension of the new technique to small scale farmers.

Therefore, it can be concluded that the implementation of the project has

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been highly effective towards achieving the overall goal of promoting fish farming by small scale farmers in the Highlands region.

4-4 Impact of the Cooperation

The team observed several fish farms operated by the local people to evaluate the impact of the cooperation. Annex 11 presents results of field observations.

There are three major impact areas of the project.

First, the increased supply of carp fingerling has changed the life style of the farmers by making them readily accept new technology into their farming system

Second, due to the success of carp fingerling production in large numbers, the people including the coastal region have become interested in small scale fish farming. Thus, the target for fish farming promotion is expanding from farmers in the Highlands to those of the whole country.

Third, the technical achievements of the project have made the PNG scientists and workers at HAQDEC much more confident in their research and development capability.

4-5 Sustainability

(a) Financial Sustainability

In the last year of the cooperation period(1999), both EHPA and DAL allocated development budget to HAQDEC.

This is a good sign of financial sustainability of the Project. However, the recurrent budget to HAQDEC is still insufficient to maintain its smooth operation. Furthermore, the amount of the development budget tends to fluctuate from year to year. Another serious problem is that the accounting and financial management capability of organizations concerned and HAQDEC are still inadequate.

(b) Institutional Sustainability

Due to the organizational reform directive by PNG government, some of the counterpart researchers have left HAQDEC. Furthermore, most of the present technical staff of HAQDEC are employed on casual basis.

Since consolidated employment is essential for the active participation of the employees to the HAQDEC activities, sufficient number of researchers and technical staff should be employed on permanent basis.

The allocation of one permanent staff by DAL to HAQDEC is a good sign towards strengthening institutional sustainability.

Relevant PNG organizations need to make further effort towards the allocation of a sufficient number of permanent personnel to HAQDEC.

Organizing, insititutinal strengthening and linkage of aquaculture development at HAQDEC has yet to be clarified fully by the PNG government.

(c)Technical Sustainability

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PNG researchers and workers have become confident in their capability to produce one million carp fingerlings without supervision by Japanese experts, even though its current fingerlings distribution system is not efficient enough to sell all of them.

Some farmers who participated in training course at HAQDEC are capable of operating their fish farms by themselves. However, the capability of PNG counterparts of HAQDEC seems to be still lacking in planning, organizing and coordinating various activities of HAQDEC and maintaining and utilizing some of the facilities and equipment.

5. RECOMMENDATIONS

The joint evaluation team concludes that the HAQDEC is able to play a significant role in the National Food Security Program and it should be further supported by both PNG and Japanese side to achieve the overall goal. The team reccomends the following items;

(a)A Japanese long-term expert is necessary for planning, organizing and coordinating various activities of HAQDEC to consolidate sustainability of the project results for period of two years.

(b)Two Japan Overseas Cooperation Volunteers are necessary to assist extension activities.

(c)PNG side makes necessary arrangement for the use of revenue from fingerlings sales and other sources as running cost and an incentive for employees of HAQDEC. HAQDEC establishes an appropriate accounting system. Also, PNG side makes utmost efforts to allocate sufficient recurrent and development budget to HAQDEC.

(d)PNG side allocates a sufficient number of permanent employees to HAQDEC and establish clear demarcation of responsibility between EHPA and DAL regarding the management of HAQDEC.

(e)Although HAQDEC can produce one million fingerlings in a year, its current fingerlings distribution system is not efficient enough to sell all of them. Therefore, the distribution system needs to be improved.

LIST OF ANNEXES

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Annex 1

Schedule of the Japanese Evaluation Team

Date		Schedule	Remarks
June	29	-Arrival in Papua New Guinea from Tokyo -Courtesy visit to National Fisheries Authority, Department of Agriculture and Livestock and National Planning Office	
	30	-Move from Port Mores by to Goroka -Discussion with Administration of Eastern Highlands Province and DAL Highlands Regional Office -Visit to fish farms in Goroka -Move from Goroka to Aiyura	*
July	1	-Visit to and discussion with Highlands Aquaculture Development Centre	*
	2	-Visit to the site of cage culture in Yonki Resevior - Move from Aiyura to Goroka -Visit to Fish Farmers in Goroka	*
	3	-Move from Goroka to Kundiawa -Visit to Fish Farmers in Kundiawa -Move from Kundiawa to Kegsugle	*
	4	-Visit to Lake Pindiaundo trout farm -Visit to neighboring farmers -Move from Kegsugle to Goroka via Kundiawa	*
	5	-Meeting with Administration of Eastern Highlands Province and DAL Highlands Regional Office -Move from Goroka to Port Morasby	*
	6	-Meeting within the mission -Report to PNG government and discussion, signing on the Minutes -Report to Embassy of Japan	*
	7	-Report to JICA Office -Move from Port Moresby to Cairns	
	8	-Arrival in Japan from Cairns	

*PNG team accompanied.

Annex 2

Chronological Review of the Cooperation

1996. 5.13~1996. 5.24	The Preliminary Survey Team Japanese Mission side: Mr. Kazuo INOUE and others Papua New Guinea side: National Planning Office : Mr. Kila Ai Eastern Highlands Province : Mr. Baungke Uke National Fisheries Authority: Mr. Dennis Renton Approved the Mini-Project Plan and signed Minitues about Technical Cooperation Program
1996. 6.23	Started the Mini-Project-Type Technical Cooperation for Highlands Aquaculture Development Project
1996. 6	Dr. Masuda became a Long-term Expert of the Mini-Project.(He already had been allocated as a Long-term expert since 1993.)
1996. 9	Arrived Mr. Yagi, Long-term Expert of the Mini-Project
1996~1999	Arrived 6 Short-term Experts, as shown in Annex 4 and sent 8counterparts to Japan, as shown in Annex 5
1996~1999	Received Machinery and Equipments Provided by JICA, as shown in Annex 6
1998. 8	Arrived Dr. Yamazaki, Long-term Expert of the Mini-Project
1998. 9	Return to Japan Mr. Yagi, Long-term Expert
1999. 6.22	Finished the Mini-Project-Type Technical Cooperation
1999. 6.29~1999. 7. 7	Arrived Japanese Evaluation Study Team for the purpose of conducting overall review and joint evaluation Japanese Mission side : Dr. Kiyoshi SAKAI and others Papua New Guinea side: Mr. Ian Mopafi and others

Annex 3

Dispatch of the Japanese Survey Teams

(1) Preliminary Survey Team

May 13,1995~May 24, 1995

Kazuo INOUE	Leader
Katuhiko KAMIYA	Cooperative Planning
Naoki MORIMOTO	Technical Planning
Tomiyuki YAGI	Technical Cooperation of Aquaculture
Akira YAMADA	Planning and Administration

(2) Evaluation Team

June 29,1999~July 7, 1999

Kiyoshi SAKAI	Leader
Hiromu IKENOUE	Fisheries Development
Yoshihiro SATO	Coordination and Cooperation Planning

Annex 4

Dispatch of the Japanese Experts

A. Long-term Experts		
Dr. Kiyoshi Masuda	June 1993 - July 1999, 6 yr	Freshwater Aquaculture
Mr.Tomiyuki Yagi	Sept 1996 - Sept 1998, 2 yr	Fingerling production
Dr. Takayoshi Yamazaki	Aug 1998 - Aug 1999, 1 yr	Fingerling production
B. Short-term Experts		
Dr. Kiyoshi Sakai	July - Aug 1996, 1 month	Fingerling production
Dr. Shinsuke Morioka	Oct - Nov 1996, 1 month	Fish farming training
Dr. Takayoshi Yamazaki	July - Nov 1997, 3 month	Fish disease
Mr. Mituyuki Horiuchi	Oct. - Nov 1998, 1 month	Fish feed
C. Third Country Experts		
Mr. Ash K. Rai	Apr - May 1997, 1 month	Chinese Carp Culture
Mr. H.L. Boliver	May - June 1999, 1month	Tilapia Culture

Annex 5

A.Counterpart Personnel Trained in Japan

Name	Organization	Subject	Period	Training Institution
Paul Murri	NFA	Fingerling Production	Mar. 1996, 3 months	Saitama Prefectural Fisheries Experimental Station
Kaupa Kia	NFA	General Aquaculture	Jan. 1997, 5 months	Tokyo University of Fisheries
Tep Mandia	NFA	Fingerling Production	Mar. 1997, 3 months	Saitama Prefectural Fisheries Experimental Station
Peter Minimulu	EHP	General Aquaculture	June 1997, 5 months	Tokyo University of Fisheries
Sailas David	EHP	Fingerling Production	Mar. 1998, 3 months	Saitama Prefectural Fisheries Experimental Station
Betty Higgins	Private	Trout Farming	Oct. 1998, 3 months	Nagano Prefectural Fisheries Experimental Station
Kine Mufuape	EHP	Fingerling Production	Mar. 1999, 3 months	Saitama Prefectural Fisheries Experimental Station
Havini Vira	EHP	Freshwater Aquaculture	Mar. 2000, 3 months	Saitama Prefectural Fisheries Experimental Station

B. Counterpart Personnel Trained in the Philippines (Third Country Training)

Name	Organization	Subject	Period	Training Institution
Maggie Seko	EHP	Freshwater Aquaculture	Aug. 1997, 4 months	Central Luzon State University
Marry Bare	EHP	Freshwater Aquaculture	Nov. 1998, 4 months	Central Luzon State University

Annex 6

List of Equipment by JICA Funding
(Grantd total of 44,449,359 YEN inculdes the equipment by JICA Funding before the Project.)

Highlands Aquaculture Development Project

List of Equipment by JICA Funding

Grand total for JICA Supplied Equipment: ***44,449,359 Yen***

in Kina (at K1.00 = JY50.00): ***888,987 Kina***

Category Equipment

Code	*Equipment Name*	*Yen Value*	*Installation*	*Condition*	*Procurement*
E-001	Acid wash tank	35,600 Yen	Laboratory	Good	Japan
E-002	Aeration set	611,900 Yen	Laboratory	Good	Japan
E-003	Artemia incubator	110,000 Yen	Laboratory	Good	Japan
E-004	Amplifier and Speaker set	70,950 Yen	Meeting room	Good	PNG
E-005	Analytical balance	253,200 Yen	Laboratory	Good	Japan
E-006	Belt feeder	251,900 Yen	Hatchery	Good	PNG
E-007	Books	190,150 Yen	Office	Good	PNG
E-008	Carpentry and machinery tools	19,050 Yen	Workshop	Good	PNG
E-009	Centrifuge machine	309,200 Yen	Laboratory	Good	Japan
E-010	Ceramic filter	47,300 Yen	Laboratory	Good	Japan
E-011	Cloth incubator	45,900 Yen	Laboratory	Used up	PNG
E-012	Color printer	22,050 Yen	Office	Good	PNG
E-013	Computer set	1,783,450 Yen	Office	Good	PNG
E-014	Copy machine	260,000 Yen	Office	Good	PNG
E-015	Desiccator	102,620 Yen	Laboratory	Good	Japan
E-016	Digital camera	61,100 Yen	Office	Good	PNG
E-017	Digital tablet	12,750 Yen	Office	Good	PNG
E-018	Dissection set	247,400 Yen	Laboratory	Good	Japan
E-019	DO meter	431,050 Yen	Laboratory	Good	PNG
E-020	Drag net	241,500 Yen	Hatchery	Repair	Japan
E-021	Egg collector (Kinran)	50,000 Yen	Hatchery	Good	Japan
E-022	Electric Oven	64,950 Yen	Laboratory	Good	PNG
E-023	Electric power tools	213,800 Yen	Workshop	Good	PNG
E-024	Electronic platform balance	57,850 Yen	Laboratory	Good	PNG
E-025	Electronic top-pan balance	297,500 Yen	Feed laborato	Good	Japan
E-026	Feed dryer	131,931 Yen	Feed laborato	Good	PNG

Category Equipment

Code	Equipment Name	Yen Value		Installation	Condition	Procurement
E-027	Feed grinder	67,500	Yen	Feed laborato	Good	Japan
E-028	Feed sieves	100,740	Yen	Feed laborato	Good	Japan
E-029	Fiberglass tank	813,650	Yen	Fish packing	Good	PNG
E-030	Field microscope	141,000	Yen	Quarantine fa	Good	Japan
E-031	Fish egg incubator	70,000	Yen	Laboratory	Good	Japan
E-032	Fish grader	464,000	Yen	Hatchery	Good	Japan
E-033	Fish tank heater	166,000	Yen	Quarantine fa	Good	Japan
E-034	Food processor	45,850	Yen	Feed Laborato	Good	PNG
E-035	Generator	1,126,900	Yen	Generator hou	Good	PNG
E-036	Glass aquarium tank	204,650	Yen	Fish packing	Good	PNG
E-037	Glass blowing kit	90,770	Yen	Laboratory	Good	Japan
E-038	Glass distiller	150,000	Yen	Laboratory	Good	Japan
E-039	Grass cutter	25,700	Yen	Storage conta	Repair	PNG
E-040	Hand operating pump	28,000	Yen	Laboratory	Good	Japan
E-041	Ion-exchange water purifier	74,500	Yen	Laboratory	Good	Japan
E-042	Laboratory drying oven	176,000	Yen	Laboratory	Good	Japan
E-043	Laboratory glassware	679,580	Yen	Laboratory	Good	PNG
E-044	Laboratory refrigerator	245,950	Yen	Laboratory	Good	PNG
E-045	Laminate machine	51,950	Yen	Office	Good	PNG
E-046	Land cruiser, station wagon	2,470,850	Yen	Garage	Repair	PNG
E-047	Laser printer	141,900	Yen	Office	Good	PNG
E-048	Limnological water sampler	188,000	Yen	Laboratory	Good	Japan
E-049	Magnetic pump	81,200	Yen	Laboratory	Good	Japan
E-050	Magnetic stirrer	45,400	Yen	Laboratory	Good	Japan
E-051	Micro feed grinder	1,932,900	Yen	Feed laborato	Good	Japan
E-052	Micro-pipette	45,920	Yen	Laboratory	Good	Japan
E-053	Muffle furnace	226,000	Yen	Laboratory	Good	Japan
E-054	Overhead projector	39,700	Yen	Office	Repair	PNG
E-055	Oxygen supply system	258,350	Yen	Laboratory	Good	Japan
E-056	Paddle wheel aerator	612,000	Yen	Fish ponds	Good	Japan
E-057	Pipette washer	21,200	Yen	Laboratory	Good	Japan
E-058	Plankton net	106,100	Yen	Laboratory	Good	Japan
E-059	Plastic desiccation box	86,000	Yen	Feed laborato	Good	Japan
E-060	Portable pump	101,900	Yen	Storage conta	Repair	PNG

Category Equipment

Code	*Equipment Name*	*Yen Value*	*Installation*	*Condition*	*Procurement*
E-061	Re-circulation aspirator	68,000 Yen	Laboratory	Good	Japan
E-062	Re-circulation incubator	327,300 Yen	Laboratory	Good	PNG
E-063	Scanner	91,450 Yen	Office	Good	PNG
E-064	Scoop net	76,900 Yen	Hatchery	Repair	Japan
E-065	Small laboratory equipment	610,457 Yen	Laboratory	Good	PNG
E-066	Spectrophotometer	1,303,050 Yen	Laboratory	Good	Japan
E-067	Spring top-pan balance	51,550 Yen	Laboratory	Good	Japan
E-068	Trout incubator	197,000 Yen	Private farm	Good	PNG
E-069	Truck, 3-ton	1,947,850 Yen	Garage	Good	PNG
E-070	TV set	97,400 Yen	Meeting room	Good	PNG
E-071	UPS	196,500 Yen	Office	Good	PNG
E-072	VHF radio set	943,060 Yen	Office	Good	PNG
E-073	Video camera	321,850 Yen	Office	Good	PNG
E-074	Video editing set	513,500 Yen	Office	Good	PNG
E-075	Waders	56,000 Yen	Laboratory	Good	Japan
E-076	Water quality checker	333,000 Yen	Laboratory	Good	Japan
E-077	Wheel barrow	233,050 Yen	Storage conta	Used up	PNG
E-078	Wire strainer	11,050 Yen	Workshop	Good	PNG

Totol of Equipment 24,382,228 Yen

Category *Facility*

Code	*Equipment Name*	*Yen Value*		*Installation*	*Condition*	*Procurement*
F-001	Air lift set	304,600	Yen	Fish ponds	Good	PNG
F-002	Feed laboratory	1,703,043	Yen	Feed laborato	Good	PNG
F-003	Fence	690,650	Yen	HAQDEC	Repair	PNG
F-004	Fish pond monk	55,100	Yen	Fish ponds	Good	PNG
F-005	Fish quarantine facility	986,721	Yen	Quarantine fa	Good	PNG
F-006	Garage	392,645	Yen	Garage	Good	PNG
F-007	Hatchery facility	996,950	Yen	Hatchery	Good	PNG
F-008	Internal gravel road	2,245,800	Yen	HAQDEC	Good	PNG
F-009	Kit house (Office)	1,072,250	Yen	Office	Good	PNG
F-010	Material for laboratory renovation	867,667	Yen	Laboratory	Good	PNG
F-011	Net storage shed	72,500	Yen	Hatchery	Good	PNG
F-012	Office furnishing material	197,000	Yen	Office	Good	PNG
F-013	Pond repair material	521,550	Yen	Fish ponds	Repair	PNG
F-014	Rain water storage tank	222,700	Yen	Laboratory	Good	PNG
F-015	Reservoir dike repair materials	258,050	Yen	HAQDEC	Good	PNG
F-016	Staff house materials	130,050	Yen	HAQDEC	Good	PNG
F-017	Storage Container	575,973	Yen	Storage conta	Good	PNG
F-018	Three-phase power supply line	1,030,353	Yen	HAQDEC	Good	PNG
F-019	Trout brood pond	376,950	Yen	Private farm	Good	PNG
F-020	Water pump	1,786,021	Yen	Pump house	Good	PNG
F-021	Water supply channel	711,928	Yen	HAQDEC	Good	PNG
F-022	Wooden path	53,250	Yen	HAQDEC	Repair	PNG
F-023	Workshop renovation material	101,950	Yen	Workshop	Good	PNG

Totol of Facility *15,353,701 Yen*

Category *Material*

Code	*Equipment Name*	*Yen Value*	*Installation*	*Condition*	*Procurement*
M-001	Chinese carp	154,350 Yen	Quarantine fa	Lost	PNG
M-002	Fish feed material	2,519,960 Yen	Storage conta	Good	Japan
M-003	Net web for aquaculture	344,900 Yen	Laboratory	Good	Japan
M-004	Reagents	760,712 Yen	Laboratory	Good	PNG
M-005	Rejected drum	10,750 Yen	Hatchery	Good	PNG
M-006	Spawning Induction hormone	287,550 Yen	Laboratory	Good	Japan
M-007	Tilapia	542,708 Yen	Quarantine fa	Good	PNG
M-008	Trout eyed eggs	77,500 Yen	Private farm	Used up	PNG
M-009	Trout fingerlings	15,000 Yen	Private farm	Used up	PNG

Totol of Material *4,713,430 Yen*

Annex 7

Expenses of the Japanese Side

(Unit: Million Yen)

Japanese Fiscal Year	1996	1997	1998	1999	Total
Provision of Machineand Equipment	15	16.2	5.21	0.35	36.76
OperationalExpenses	1.5	5.38	3.41	2.75	13.04
SpecialFund (Feed Processing System)	-	-	5.17	-	5.17
SpecialFund (AerationSystem)	-	-	1.87	-	1.87
SpecialFund (Back-up Generator)	-	-	1.75	-	1.75
SpecialFund (In-Farm TrackGraveling)	-	-	2.23	-	2.23
Total	16.5	21.58	19.64	3.1	60.82

Annex 8

List of the Counterparts

	Name	Organization	Work Period at HAQDEC	Work Place
1	Paul Murri	NFA(Rural Dev Officer)	'90~	HAQDEC
2	Jacob Wani	NFA(Scientific Officer)	'95~'98	FAO(Fiji)
3	Tep Mandia	NFA(Rural Dev Officer)	'96~'98	Local Center of NFA
4	Kaupa Kia	NFA(Scientific Officer)	'95~'97	H.Q. of NFA
5	Kine Mufuape	EHP(Provincial Fish Officer)	'98~	HAQDEC
6	Peter Minimulu	EHP(Temporary Employee, Scientific Officer)	'98~	HAQDEC
7	Kevin Tanuel	EHP(Temporary Employee, Rural Dev Technician)	'97~'98	left
8	Noel Tonko	EHP(Temporary Employee, Rural Dev Technician)	'97~'98	HAQDEC
9	Glen Hogi	EHP(Temporary Employee, Rural Dev Technician)	'98~'99	left
10	Havini Vira	EHP(Temporary Employee, Scientific Officer)	'98~	Yonki Station , HAQDEC
11	Tensa Tepi	EHP(Temporary Employee, Rural Dev Technician)	'98~	HAQDEC
12	Tripiso Apaise	EHP(Temporary Employee, Rural Dev Technician)	'98~	HAQDEC
13	Maggie Seko	EHP(Rural Dev Technician)	Non	Goroka, EHP
14	Sailas David	EHP(Rural Dev Technician)	Non	Goroka, EHP
15	Marry Bare	EHP(Rural Dev Technician)	Non	Goroka, EHP

Annex 9

Expenses of PNG Side

(Unit: Kina)

Project Year	|Year1	Year1 | Year2	Year2 | Year3	Year3 |	Total
PNG Fiscal Year	1996	1997	1998	1999	
NFA Operational Expenses	50,000	0	0	0	50,000
EHP Operational Expenses	-	50,000	100,000	100,000	250,000
EHP Fisheries Extension Expenses	-	-	10,000	25,000	35,000
EHP Yonki Cage Culture Expenses	-	-	-	50,000	50,000
DAL Highlands Aquaculture Development Expenses	-	-	-	111,000	111,000
Total	50,000	50,000	110,000	286,000	496,000

Annex 10

Training by HAQDEC

	Period	Subject	Place	Participants
1	22 - 28 Sept. 1996	Carp fingerling production	HAQDEC	28
2	17 - 23 Nov. 1996	Carp farming for extension officers	HAQDEC	28
3	22 July - 1 Aug. 1997	Trout farming	LPYTF*	25
4	30 Sept. - 8 Oct. 1997	Carp farming for extension officers	HAQDEC	23
5	15 - 21 Feb. 1998	Carp fingerling production	HAQDEC	34
6	15 - 19 June 1998	Trout farming	LPYTF*	42
7	26 - 30 Oct. 1998	Carp farming for extension officers	HAQDEC	44
8	22 - 30 Feb. 1999	Carp fingerling production	HAQDEC	30

Total 254

* LPYTF : Lake Pindi Yaundo Trout Farm, Mt. Wilhelm, Gemgoble dist. Simbu Province, A private trout farm owned by Mrs. Betty Higgins.

Annex 11

Results of field observation

The team visited 6 carp farmers which include 4 mono-culture carp farms and 2 polyculture (carp and rainbow trout) farms near Goroka amd in Simbu Province .

Among them, two farms are reselling carp fingerlings bought from HAQDEC.

Two carp culture farms are producing carp fingerlings by themselves.

Fr. Joseph Sakite at Goglme in Simbu Province bought 200,000 carp fingerlings from HAQDEC and has sold them to farmers in his church area during the last 4 years. He told us that the fingerling had grown to table size in the farmers' ponds by feeding mainly sweat potato. Some of the fish have spawned in the pond naturally and many fingerlings have been produced.

The farmers are happy to eat the table size carp grown in their own ponds.

Fr. Sakite is teaching the farmers methods on smoking and salt-drying fish.

HAQDEC has also conducted the training to fish farmers on the rainbow trout culture around Highland area.

One fish farmer in Simbu Province has succeefully produced 200,000 rainbow trout fingerlings with the supports of HAQDEC in 1998.

One hundred and eighty (180) small scale farmers have built ponds and have introduced rainbow trout fingerlings into their ponds and are feeding the young trout with local feed and earth worms.